
Alkaliphiles
just the basics
life in the extremes
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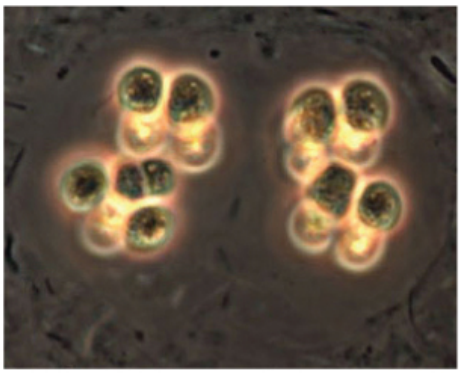

Colonies of blue-green bacteria called *Microcystis* flourish in alkaline environments like Mono Lake, California seen on the front of this card.

EXTREME ABILITY Alkaliphiles thrive in substances that are capable of neutralizing strong acids. These alkaline environments typically have pH values ranging from 9 to 11. To survive such harsh conditions, these organisms have evolved unique enzymes, specialized cytoplasm, and efficient cell membranes to protect their cells from damage.

EXTREME ENVIRONMENTS These microbes inhabit such places as soda lakes, caves, alkaline hot springs, deserts, and waste dumps from mines.

EXTREME EXAMPLES Alkaliphiles are used in making paper and recovering spilled oil. They are also common ingredients in dishwashing detergent and laundry soap.

Photo Credit: Mono Lake, California is 80 times more alkaline than the ocean - Mila Zinkova (front); *Microcystis* - David Patterson and micro*scope (back). For more information visit http://astrobiology.nasa.gov/